

## NEW ORIBATIDÆ FROM THE UNITED STATES.

BY NATHAN BANKS.

The Oribatidæ, or "beetle-mites" as they have been called because of their hard teguments, have been but little collected or studied in our country. In 1895 the writer described those he had observed on Long Island, N. Y., and a few others. In 1896 a few more were added to the list. Now I describe twenty-four more, from various parts of the country.

Our Oribatid fauna is similar to that of Europe, so far but one or two peculiar genera; but we have a larger percentage of smooth species, as *Galumna*, *Oribatula*, and fewer of the roughened species, as *Notaspis*, *Nothrus*, and *Cepheus*. The genus *Pelops*, represented in Europe by ten or twelve species, has not yet been found in North America.

*Galumna slossonæ* n. sp.

Color, dark brown, a pale spot at base of abdomen, legs pale. Cephalothorax with a long lamella each side, its apical third free and pointed, bearing a rather short bristle; a narrower lamella or ridge on each outer edge, ending in a short bristle; superior bristles long, erect; pseudostigmatic organ long, clavate at tip. Abdomen longer than broad, smooth, with six rather thickened bristles each side, two toward humerus, four near tip; wings quite long, not one-half as high as long; genital opening about twice its length in front of the larger anal opening; sternum with three lines each side, middle pair longest. Legs quite long and slender; femora I and II very broad, femur II with a pointed lobe at tip beneath; all tibiæ with two stout spines at tip, one on patella II, and one below tarsi IV; three strongly unequal claws, the middle one very much larger than the others; a large tectopedium behind coxa I.

Length .5 mm.

From Franconia, N. H. (Mrs. A. T. Slosson.)

*Galumna unimaculata* n. sp.

Color, red brown, a yellowish spot at base of the abdomen. Cephalothorax with a rather broad lamella each side, its apical fourth free, tip slightly emarginate, and with a short bristle; superior bristles rather fine, long; pseudostigmatic organ not very long, clavate at tip. Abdomen large, globose, rather longer than broad, four pale smooth spots on each side, the basal pair much larger than the others; nine bristles

each side, two submedian toward base, one humeral, rather longer than others, four on posterior part, and two on the posterior margin; wings large, nearly as high as long, projecting a little in front of the abdomen, evenly rounded below; both wings and abdomen evenly, minutely granulate; genital opening twice its length in front of larger anus; venter granulate; sternal plate with two lines each side. Legs short and small, high up on the sides, leg IV not near as long as width of the body; with fine hairs as usual; three equal claws.

Length 1 mm.

Franconia, N. H. (Mrs. A. T. Slosson.)

*Galumna nitidula* n. sp.

Dark red brown, no basal spot on abdomen; legs pale yellowish. Cephalothorax very small and short, a lamella along each side, two-thirds the way to tip, its tip free and ending in a short bristle; superior bristles very short; pseudostigmatic organ rather short, fusiform. Abdomen plainly longer than broad, high, without hairs, smooth and shining, venter also; wings very small, angulate in front; genital opening one and one-half its length in front of much larger anal opening; sternal plate with two furrows across, hind margin of hind coxæ running into middle of genital opening; legs very short and small; the tarsi equal to the tibiæ; three equal claws.

Length .7 mm.

From Franconia, N. H. (Mrs. A. T. Slosson.)

*Galumna persimilis* n. sp.

Color, dark brown, a pale spot at base of abdomen, legs pale yellowish. Cephalothorax with a broad lamella each side, its apical third free and ending in a long bristle, on outer side a long, erect pointed lamella, ending in a quite long bristle, a short lamella each side on tip of cephalothorax, higher in middle than at either end; superior bristles long, erect; pseudostigmatic organ short and clavate. Abdomen smooth, globose; nine bristles each side, those toward apex thickened and almost clavate, one humeral, three near middle of each side, and five toward tip; wings not very large, much longer than high, triangular, but rounded below; venter smooth; genital opening twice its length in front of larger anus; a pair of bristles behind anus; sternal plate with three lines each side, middle longest. Legs short and slender; tarsi as long as tibiæ; a spine-like, barbed bristle beneath each patella, and two at tips of tibiæ; femur IV margined beneath; a large tectopedium behind coxa I; three equal claws.

Length .5 mm.

From Franconia, N. H. (Mrs. A. T. Slosson.) Differs from *G. slossonæ* by equal claws, very short pseudostigmatic organs, etc.

*Galumna imperfecta* n. sp.

Color, pale yellow brown, legs paler. Cephalothorax with a rather broad lamella on each side, reaching one-half way down, with a long hair at tip; superior bristles long, erect; pseudostigmatic organ very long, clavate at tip. Abdomen large, barely longer than broad, not very high, smooth and shining, no hairs; wings of moderate size, triangular, one-half as high as long, not projecting in front of abdomen, outer lower corner rounded; venter smooth; genital opening fully twice its length in front of the much larger anal opening, a short transverse line a little in front of the anus; sternum with three transverse grooves, the posterior two run into the genital opening, the other is angulate on middle, but does not reach the sides. Legs rather short, femora broad, tarsi about as long as tibiæ, but one claw to each tarsus.

Length .6 mm.

Several from Indianapolis, Ind. (Blatchley.)

*Galumna minuscula* n. sp.

Color, yellowish brown, legs paler. Cephalothorax with a lamella each side, connected near tip by a translamella, a rather long barbed hair from near base of tip; on each outer edge a low marginal lamella, which ends in a long bristle; superior bristles long, and barbed; pseudostigmatic organ very short, capitate. Abdomen globose, smooth, without hairs, its outline in front not complete; venter smooth; genital aperture one and one-half its length in front of larger anal opening, a transverse ridge shortly behind anus, which is fully as broad in front as behind; sternal plate with a line each side in front of genital opening, and a dot each side in front of this; wings small, not projecting in front of abdomen, the lower anterior corner rounded. Legs short; the femora broad, especially II and IV, and margined above with bristles before middle; tarsi equal to tibiæ.

Length .5 mm.

From Bay Ridge, Md. Differs from *G. mæsta* Bks. by having a translamella, and by less divided sternal plate.

*Galumna armipes* n. sp.

Color, dark brown, a yellow spot on base of abdomen, cephalothorax and legs yellowish. Cephalothorax with a broad lamella on each side, reaching nearly to tip of head, it terminates in a short, curved bristle. just above the translamella is a pair of short bristles, no superior bristles; pseudostigmatic organ spatulate, porrect. Abdomen longer

than broad, its dorsum minutely roughened, without hairs, wings finely granulate, not very long, but nearly as high, margin evenly convex; ventral surface finely granulate; the genital opening not quite its length in front of the larger anal opening, the latter broader behind than in front, where it tapers roundedly; sternal plate with three furrows each side, the second being the longest. Legs rather short; tarsi longer than tibiæ, two barbed spines below on tarsi I and II, one on tibiæ I and II, also on tarsi and tibiæ IV; hind femora margined below.

Length .4 mm.

From Falls Church, Va., and Fort Lee, N. J.

*Galumna virginica* n. sp.

Color, pale yellowish. Cephalothorax with a broad lamella each side, its apical two-fifths free, and tipped by a long bristle; a low ridge outside each lamella; superior bristles erect, not very long, barbed; pseudostigmatic organ very long, clavate at tip. Abdomen longer than broad, depressed, smooth, without hairs; wings very long, not one-half as high, rounded below; venter smooth; genital opening once and one-half its length in front of the very much larger anus; sternal plate with three lines each side. Legs rather short and stout; femora III and IV margined below; bristles under tarsi and tip of tibiæ are stout and barbed; tarsi I and II plainly longer than tibiæ, tarsi III and IV hardly as long as tibiæ; three equal claws.

Length .5 mm.

From Falls Church, Va.

*Galumna turgida* n. sp.

Color, reddish brown, legs paler. Dorsum smooth; cephalothorax with a lamella each side reaching more than half-way down, a narrow transverse ridge connecting the lateral ones; inferior and superior bristles barbed, the latter very long; pseudostigmatic organ very short, capitate; abdomen very large, globose, without hairs; wings not very large, longer than high, rounded below; genital opening more than twice its length in front of the much larger anal aperture; from the hind coxæ there is a line obliquely up on each side to the dorsum. Sternum with a line each side toward anterior margin of the genital opening, and in front of this a dot each side; behind on each side is a short line. Legs moderately long, femur I rather swollen above, femora III and IV only slightly margined below; tarsi longer than tibiæ; three equal claws.

Length .6 mm.

Several from Palm Springs, California. (Hubbard.)

*Galumna texana* n. sp.

Color, dark red brown, pale spot at base of abdomen, and legs pale yellowish. Cephalothorax short and broad, nearly smooth, superior bristles long, porrect, inferior bristles short, lamellæ indistinct; pseudostigmatic organ quite long, clavate at tip. Abdomen high and broad, two black notches on front margin, surface finely punctate; wings very large, long and broad, rather coarsely punctate, its lower margin entire. Venter more roughly rugose, almost reticulate; genital opening once and two-thirds its length in front of the much larger anal opening; the latter is much broader behind than in front. Coxæ IV very widely separate; the sternal plate with a line each side; legs small and very slender, with a few hairs in usual positions.

Length .7 mm.

One specimen from San Antonio, Tex., August.

*Oribatula pallida* n. sp.

Color, pale yellowish. Cephalothorax smooth above, with a lamella each side reaching one-half way to tip, a long bristle at each tip, superior bristles long and erect; pseudostigmatic organ quite long, clavate at tip. Abdomen much longer than broad, smooth above, without hairs, no distinct wings, but at each anterior corner a shelf-like projection; genital opening more than twice its length in front of the very much larger anal opening; a transverse furrow behind coxæ II pointing toward genital aperture, in front and behind this furrow is a line on each side, but no line from hind coxæ to genital opening. Legs slender tarsi all a little longer than the tibiæ; all with fine hairs.

Length .38 mm.

One specimen from Fort Lee, N. J.

*Liacarus carolinensis* n. sp.

Color, dark brown, legs paler. Cephalothorax with two pairs of lamellæ, the inner pair are quite broad, and touch on inner side toward base, leaving a broad triangular space above, each with free tip and a long bristle, outer lamella narrow, and nearly reaches tip of head, with a bristle at apex; pseudostigmatic organ rather long, not barbed. Abdomen elongate, tapering behind, smooth above, no hairs; venter very minutely punctate; genital opening small, more than three times its length in front of the very much larger anal opening, the latter more than twice as long and more than twice as broad as the genital opening, and longer than broad; the posterior margin of body seen from below shows three short fine bristles each side, the inner pair shorter than the others; sternal plate with three complete transverse lines, hind margin

of coxæ IV running into the genital opening slightly in front of the middle; a large tectopedium behind coxæ I. Legs very slender; tarsi I and II slightly longer than tibiæ; tarsi III and IV much shorter than those tibiæ; three spine-like bristles below tarsi III and IV, and those on these tibiæ are rather short; three equal claws.

Length 1.1 mm.

One specimen from Black Mountain, N. C. (Beutenmüller.)

*Liacarus abdominalis* n. sp.

Color, red-brown, legs paler. Cephalothorax, with a broad submedian lamellæ, nearly touching before tip, their apical fourth free, and tipped by a long bristle, a long, low outer ridge or lamella, reaching nearly to tip of head and ending with a short bristle; superior bristles very long, erect, simple; pseudostigmatic organ of moderate length, swollen toward tip and then tapering to a fine point. Abdomen elongate, smooth, no hairs above; venter smooth; fine hairs each side of anus, and a pair behind; genital aperture very small, fully three times its length in front of anus, the latter more than twice as long, and twice as broad as the genital opening; sternal plate with three complete furrows. Legs slender, the hind pair do not reach tip of abdomen; a large tectopedium behind coxa I; tarsi I and II as long as tibiæ, tarsi III and IV much shorter than tibiæ; all the hairs are fine; three equal claws.

Length 1 mm.

One specimen from Claremont, Cal. (Baker.)

*Liacarus frontalis* n. sp.

Pale yellowish brown, legs paler. Cephalothorax with two low lamellæ each side, the submedian pair nearly meet somewhat beyond middle of cephalothorax, and are tipped with long, porrect bristles, the marginal lamellæ reach nearly to tip of head and end in short bristles; the superior bristles are long, simple, and erect; pseudostigmatic organ rather long, fusiform, its tip acute. Abdomen nearly circular, not very high, smooth, without hairs; venter smooth; genital opening circular, one and one-fourth its length in front of much larger anal opening, the latter evenly elliptical; sternal plate with three transverse lines, all complete, hind margin of coxæ IV running into middle of genital opening. Legs slender, with simple hairs; tarsus I shorter than tibia I, tarsus IV nearly as long as tibia IV; three equal claws; mandibles large and stout, palpi very distinct.

Length .5 mm.

From Falls Church, Va.

**Notaspis castanea** n. sp.

Color, red brown, legs paler. Cephalothorax with a broad lamella each side, nearly touching before the tip, the tip deeply excavate, leaving a sharp point each side, from middle of tip arises a long simple bristle; superior bristles short, erect; pseudostigmatic organ short and fusiform, with a pointed tip, in length not more than one-third the width of the cephalothorax. Abdomen somewhat longer than broad, broadest in middle, dorsum minutely punctate, without bristles. Whole under surface of body strongly punctate, and uniformly so; genital aperture twice its length in front of the larger anal opening, the latter longer than broad. Sternal plate transversely divided by a furrow much nearer to the posterior than to the anterior margin. Legs rather slender, IV longer than width of body at that point; tarsus I shorter than the tibia; a sharp-pointed tectopedium behind coxa I.

Length .95 mm.

One specimen from Humboldt, Cal.

**Notaspis carbonaria** n. sp.

Color, shining jet black, legs yellowish. Cephalothorax with a broad lamella each side, extending beyond head, tip excavate, but the inner point much longer than outer, from middle of tip arises a long simple bristle; superior bristles as long as cephalothorax, simple; pseudostigmatic organ slender, simple, rather longer than one-half the width of cephalothorax. Abdomen elongate, more than three times as long as cephalothorax, and tapering behind; densely pitted above and below. Venter with a curved ridge behind, extending forward each side in front of anal aperture, and almost traceable to hind coxæ. Genital aperture with hind border about as far forward as hind margin of hind coxæ, fully three times its length in front of the anal aperture, the latter nearly twice as broad and twice as long as genital opening. Sternal plate divided by a transverse furrow. Legs short and weak, IV not more than two-thirds of width of body at that place; all tarsi short, the first much shorter than tibia I, and bearing a hair beyond its middle more than one-half longer than joint; claws three.

Length 1.4 mm.

One specimen from Humboldt, Cal.

**Oppia spinipes** n. sp.

Color, pale yellowish brown, legs paler, lamellæ blackish. Cephalothorax with a pair of low, submedian lamellæ, the apical third free, and terminating in a long barbed bristle; a short lamella each side near apex of head, and ending in a short bristle; superior bristles long, porrect,

finely barbed; pseudostigmatic organ quite long, barbed, not thickened at tip. Abdomen globose, with four, rather long, barbed bristles behind; genital aperture scarcely its length in front of the larger anal opening; sternal structure as in *O. bipilis*, the hind furrow running into middle of genital opening, a transverse furrow in front of this, and in front of latter is a short furrow on each side. Legs quite long and slender; femora III and IV very broad, and margined below, II moderately broad, I pedicellate; tarsi III and IV with two or three stout, barbed, spine-like bristles; a long, barbed bristle from trochanter III; three claws.

Length .4 to .7 mm.

Several examples from Falls Church, Va. This is strictly congeneric with *O. bipilis* of Europe.

***Oppia canadensis* n. sp.**

Color, pale yellow. Cephalothorax with lamellæ like *O. spinipes*, but they are much longer, nearly one-half the length is free; the superior bristles are rather longer; the pseudostigmatic organs about the same. The abdomen has four long bristles behind, the submedian pair plainly longer than in *O. spinipes*; the abdomen above and below is slightly roughened; genital opening its length in front of larger anus, latter with two bristles each side, and a pair behind; sternal structure as in *O. spinipes*; hind coxæ large and broad; a long bristle from trochanter III; the spine-like bristles on hind tarsi are rather more slender than in *O. spinipes*.

Length .7 to .85 mm.

Several from Ottawa, Canada. (Harrington.)

***Oppia montana* n. sp.**

Color, pale yellowish. Cephalothorax with lamellæ as in allied species, fully one-third of length free; superior bristles very long, barbed; the barbed pseudostigmatic organ is longer than in *O. spinipes*. The abdomen is globose, with six short hairs behind, the superior median pair longer than the others, but all much shorter than in *O. spinipes* and *O. canadensis*; genital aperture one and one-fourth its length in front of the somewhat larger anus, sternal structure as in allied species; legs long and slender, the barbed bristles not very stout; a barbed bristle on trochanter III.

Length .5 mm.

From Franconia, N. H. (Mrs. A. T. Slosson.)

***Cepheus lamellatus* n. sp.**

Color, red brown, legs paler, lamellæ pale brown, reticulate. Cephal-

othorax triangular, with a broad lamella each side, broader near tip than at base, and the tip trilobed, the middle lobe giving rise to a curved, simple bristle; a pair of smaller bristles on tip of head. Superior bristles long and rather thick. Seta about one-half the width of the cephalothorax, and clavate at tip. Abdomen nearly circular in outline, not very high, above densely and roughly reticulate with rather heavy ridges, with ten pairs of thick bristles, all minutely barbed; one on each shoulder, two each side back and inward from this, three in a submarginal row on each posterior side, and four each side on posterior margin, two of them being near the tip, and rather more clavate than the others. Legs rather slender, with hairs in usual arrangement, long ones from tip of tibia and near middle of tarsus. Coxæ separated, but coxæ II united on the median line; coxæ III and IV very short, especially the latter, these giving room for the genital aperture, which is not one-half its length in front of the much larger anal opening; venter finely irregularly rugose.

Length .65 mm.

One specimen from Blue Hill, Mass., October.

*Oribata puritanica* n. sp.

Color, dark red brown, legs paler. Cephalothorax triangular, surface smooth, two pairs of curved bristles near tip, an erect bristle near base of each pseudostigmatic organ, the latter straight, thick, and nearly as long as width of cephalothorax at that point. Abdomen globose, smooth, with five pairs of stout, fusiform bristles above; a basal pair pointing forward on extreme front margin of abdomen, the others behind in a submarginal row each side; a pair of longer, curved, simple bristles at tip. Venter smooth; genital and anal apertures touching; anal plates with two or three striae, and each aperture with two simple bristles each side, and two behind anus. Sternal plate with a broad, deep furrow each side. Legs slender; I barely longer than body, IV plainly longer; joints swollen at tips, and each with several long, curved bristles near tip; tarsi very slender; but one claw.

Length 1 mm.

One specimen from Middlesex Fells, Mass., October.

*Oribata longiseta* n. sp.

Color, pale yellowish brown. Surface above and below smooth. Cephalothorax with an apical pair of short bristles, and a stout black bristle each side on vertex, near the pseudostigma. The pseudostigmatic organ, long and slender, with a curved and barbate tip, plainly longer than width of cephalothorax. Abdomen globose, with scattered

fine erect bristles, about 25 of them, none long; three in front and two rows each side behind, those on apical third longer and thicker than others, but the last pair short. Venter smooth; genital and anal openings touching, the latter more elongate; a pair of short bristles just behind anus, and a transverse, black ridge just before tip; sternal plate with a dark furrow each side. Legs slender; the joints nodose; I a little longer than body, IV plainly longer, tarsi extremely slender; femora I and II plainly larger than others; all with curved bristles, mostly plumose, at least near tip, that from patellar joint of leg IV extremely long, and plumose at tip, another very long, simple hair at tip of tibia IV; but one claw. A short, sharp spine behind coxa I, a larger one behind coxa II.

Length .75 mm.

Several specimens from Falls Church, Va., December.

**Nothrus taurinus** n. sp.

Dull brown, rather paler in middle of the abdomen. Cephalothorax and abdomen roughened; a large curved process each side on tip of cephalothorax, a pair of bristles from near middle, and an irregular transverse ridge across base; pseudostigmatic organ short, and capitate. Dorsum of abdomen depressed, margins raised, four long erect bristles on each side, another more curved before tip, a straight one from each apical corner, and a submedian pair of curved ones at tip, a basal submedian pair of shorter ones, and a longer humeral pair, all very stout. Abdomen elongate, about twice as long as wide at base, only a little wider at tip; genital and anal openings about equal in size, and touching; the latter much before tip, and behind it each side are a couple of bristles. Legs short and heavy, all with a few curved hairs; femora broad at base; leg IV not reaching tip of body.

Length 1 mm.

One specimen from Falls Church, Va.

**Neoliodes floridensis** n. sp.

This species is similar in most respects to *N. concentricus* Say, but at once separated therefrom by the fact that the basal median part of the dorsum of the abdomen (on the first turn) is separated from the sides by a lateral ridge, and the enclosed space is densely granulate; in *N. concentricus* this part is longitudinally striate, and there is no lateral ridge. The apex of the abdomen above is not as high nor as pointed as in *N. concentricus*. The legs are somewhat shorter, but the most distinct difference in the legs is that in this species there is a large lobe below at apex of each femur, especially large on legs I and II; the tarsi

and pseudostigmatic organs are somewhat shorter. Color, black, a pale area each side at base of the cephalothorax.

Length .9 mm.

Many specimens from Lake Worth, Fla. (Slosson.)

#### EXPLANATION OF PLATES XIV, XV, XVI, XVII, XVIII.

PLATE XIV.—Fig. 1.—*Galumna slossonæ*.

Fig. 2.—*Galumna slossonæ*, wing.

Fig. 3.—*Galumna slossonæ*, legs I and II (below).

Fig. 4.—*Liacarus frontalis*.

Fig. 5.—*Liacarus frontalis*, leg I, and seta.

Fig. 6.—*Oribata puritanica*, seta, and hair from body.

Fig. 7.—*Oppia canadensis*.

Fig. 8.—*Galumna armipes*, wing, and tarsus I.

Fig. 9.—*Galumna armipes*.

PLATE XV.—Fig. 10.—*Oppia montana*.

Fig. 11.—*Galumna minuscula*.

Fig. 12.—*Oribata longiseta*, seta, and hair from body.

Fig. 13.—*Galumna persimilis*, wing.

Fig. 14.—*Cepheus lamellatus*.

Fig. 15.—*Galumna persimilis*.

PLATE XVI.—Fig. 16.—*Notaspis castanea*.

Fig. 17.—*Liacarus carolinensis*.

Fig. 18.—*Galumna virginica*.

Fig. 19.—*Neoliodes floridensis*, leg I.

Fig. 20.—*Galumna virginica*, wing.

Fig. 21.—*Galumna imperfecta*.

PLATE XVII.—Fig. 22.—*Oppia spinipes*.

Fig. 23.—*Nothrus taurinus*.

Fig. 24.—*Galumna texana*.

Fig. 25.—*Galumna turgida*, wing, and seta.

Fig. 26.—*Galumna turgida*.

Fig. 27.—*Galumna nitidula*.

PLATE XVIII.—Fig. 28.—*Oribatula pallida*.

Fig. 29.—*Liacarus abdominalis*.

Fig. 30.—*Notaspis carbonaria*.

Fig. 31.—*Notaspis carbonaria*, leg I.

Fig. 32.—*Liacarus abdominalis*, leg I.

Fig. 33.—*Galumna unimaculata*.